

Application device

Background of the inventionDescriptionField of the invention

- 5 The invention relates to a device for the application of ^{present} at least two liquid ~~to~~ ^{or} pasty application media to one or both sides of a moving surface, having a curtain applicator for applying the application media. The curtain applicator discharging ~~ing~~ ^{es} the application media
- 10 onto the moving surface as curtains moving substantially under the force of gravity, and the surface, in the case of direct application, being the surface of a material web, in particular of paper or boards, and ~~In~~ the case of indirect application being
- 15 the surface ~~of~~ ^{being} a transfer element, for example an applicator roll, which transfers the application media to the surface of the material web.

Description of the related art

- Such curtain applicators, with which a plurality of
- 20 application media can be applied, are generally known from the prior art. In these known curtain applicators, the application media are collected together by a tray. The tray is arranged between the curtain applicator and the moving surface, so that it
- 25 is used when starting up or stopping the curtain applicator, or for producing uncoated edges on the moving surface. Since the application media are collected together by the tray, they mix in the tray. Therefore, the expensive application media can no
- 30 longer be used for further coating. Separation of the application media from one another can be implemented only in a very complicated manner and is thus expensive. The mixed application media therefore have to be disposed of, ~~as a result of which~~ further high
- 35 costs arise. result in

Summary of the invention

provides an

The object of the invention is ~~to~~ ^{present} improved device of the type mentioned at the beginning to the effect that

What is needed in the art is a cost effective media recovery system.

the application media can ~~in future in each case~~ be used again after being collected and no longer have to be disposed of.

- 5 The invention achieves ~~the~~ ^{this} ~~object~~ ^{ive} by means ^{way} of a curtain applicator ~~of the type mentioned at the~~ ^{present} ~~beginning in which,~~ according to the ^{and} invention, a collecting device for the separate collection of each application medium ~~is provided~~ ^{positioned} between the curtain applicator and the material web, ~~it being possible for~~ ^{can} the curtain applicator and the collecting device ~~to be~~ moved relative to each other. Since the collecting device collects the various application media separately, ~~these~~ ^{the media} ~~can no longer~~ mix. They can therefore be used again for a further coating operation and no longer have to be disposed of. As a result, both the high procurement costs for the application media are reduced and the disposal costs are saved.
- 10
- 20 A discharge device ~~can be~~ ^{is} arranged on the collecting device. The application media collected can then be led away from the collecting device in order to be available again for the coating operation.
- 25 In order to be able to pass the application media on from the collecting device to the discharge device, the collecting device can be equipped with discharge openings to pass ~~on~~ the application media to the discharge device.
- 30 If ~~the~~ ^{so that} collecting device has inclines arranged above the discharge openings, ^{by way of} the application media can be led to the discharge openings ~~via~~ the inclines.
- 35 ~~In order~~ ^{So} that the application media can be collected separately by the collecting device, the collecting device ~~can be~~ subdivided into a plurality of mutually

adjacent sections, each of the sections holding only one application medium.

↗
The mutually adjacent sections of the collecting device
5 can be separated from one another by a separating element. This ensures that the various application media do not mix with one another.

The discharge openings in one section are adjacent to
10 the inclines on the adjacent section. Then, the application medium, picked up by one of the sections, can flow off into the discharge openings of this section and flow under the inclines of the adjacent section
15 to the discharge device. In this way, the inclines fulfill a further function in that, by means of said the inclines, various application media can cross without the crossing application media mixing with one another.
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way

20 In order to lead the application media coming from the collecting device away separately from one another, the discharge device can have a discharge plate, at the end of which there is arranged a separate drainage channel for each application medium.

25 In order that the various application media cannot mix with one another on the discharge plate, the discharge plate can have at least one separate channel for each application medium.

30 ↗
The channels of the discharge plate ~~can~~ bridge at least one of the drainage channels located beside one another at the end of the discharge plate. Then, one of the application media, which is carried in the bridging
35 channel of the discharge plate, crosses at least one of the other application media at the transition from the discharge plate to the drainage channel. As a result
has

of this crossing, mixing of the two application media is reliably ruled out.

5 In order to rule out ^a mixing of the application media on the discharge plate ~~reliably~~, it is advantageous if the channels are separated from one another by a metal sheet.

10 The discharge plate can have a gradient, in order to be able to carry away the application media as quickly as possible. A satisfactory discharge flow is achieved with a gradient of at least five degrees.

15 The application media can preferably be carried away to the side on which the drives are placed. Then, from the other side, on which an operator's desk is located, the device can be monitored freely by the operating personnel of the operator's desk. In principle, however, the application media can be carried away on *either or*
20 both sides of the device.

The collecting device and the discharge device can be formed in one piece. As a result, the entire unit *including a*
~~comprising~~ collecting device and ^a discharge device
25 becomes very dimensionally stable, so that reliable discharge of the application media is provided.

of the present invention
In another embodiment, ~~however~~, it is also possible for the collecting device and the discharge device to be
30 separate components. Then, only the collecting device need be removed in order to begin or end the coating operation. The discharge device and discharge hoses connected to the latter can then ~~therefore~~ remain in place, so that overall a smaller mass has to be moved.
35 In this case, only a relatively small drive is required for the collecting device. In addition, the collecting device can be moved more quickly under the curtain or

moved away under the curtain if the mass to be moved is smaller.

The collecting device can have two sections which can
5 be moved in opposite directions in the longitudinal
direction of the material web. Minimal mixing of the
application media when the coating operation is started
or ended is then ruled out absolutely. However,
minimal mixing of the application media occurs if the
10 sections are moved in the same direction at the start
or at the end of the coating operation.

In a particular embodiment ^{of the present invention} the separating element
arranged between the sections can have a deflection
15 device for deflecting the application media into the
various sections. Then, at the start or at the end of
the coating operation, minimal mixing of the
application media is ruled out ~~reliably~~, since the
deflection device deflects the respective application
20 medium into the ^{respective} ~~section provided for the purpose~~ as the
collecting device is moved. The deflection device can
~~advantageously be pivoted, so that it can~~ be pivoted
appropriately on the basis of the direction of movement ^{of the web}
and the movement travel covered, in order to conduct
25 the application medium optimally into the section
provided for the purpose.

If a lower collecting device is provided under the
material web, the application media can also be
30 collected in the event of a break in the material web.
Since the movable collecting device cannot be moved
under the curtain quickly enough in the event of a
break in the material web, the lower collecting device
is particularly advantageous.

35 ^{present} In a development of the invention, the application
media can likewise be collected separately by the lower
collecting device.

In one preferred embodiment, ^{of the present invention} the lower collecting device has a separate channel for each application medium, in order to be able to collect the application media separately.

In order to rule out undesired mixing of the application media ~~reliably~~, the channels can be separated from one another, for example by separating elements.

Drawings

In the following, exemplary embodiments of the device according to the invention will be explained in more detail by using the appended drawing, in which, in detail:

fig. 1 shows a schematic view of ^{one embodiment of} the device according to the ^{present} invention;

fig. 2 shows a perspective view of ^{an embodiment of} a curtain applicator having a discharge device. ^{of the present invention}

^{Fig. 3 is a perspective view of another embodiment of a collecting device of the present invention.}
 Fig. 1 shows ^{there is} a device 10 for applying two application media forming a curtain 11 and 12. The application media are applied to a material web 102, ^{way} here in a direct manner, ^{by means of} by means of a curtain applicator 13 extending transversely over ~~the~~ material web 102 to be coated. Under ~~the~~ curtains 11 and 12 there is arranged a collecting device 16, which has two sections 14 and 15 and, like ~~the~~ applicator 13, ~~likewise~~ extends in ~~the~~ transverse direction Q. ~~The~~ Collecting device 16 collects the application media forming ~~the~~ curtains 11 and 12 separately with ~~the~~ sections 14 and 15. Since ~~the~~ collecting device 16 collects each application medium separately, the application media cannot mix. The collected application media pass from ~~the~~ collecting device 16 to a discharge device 17 extending in the longitudinal direction of ~~the~~ material web 102.

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The ~~Discharge~~ device 17 carries the collected application media away, in order that the latter can be used again for the ~~the~~ further coating operation. The ~~Discharge~~ device 17 has a discharge plate 18, at the
 5 end of which there are arranged separate drainage channels 19 and 100 for each application medium. In order to be able to carry away the application media as quickly as possible, the discharge plate 18 has a gradient.

10

At the start or at the end of a coating operation, the collecting device 16, arranged above the material web 102, can be moved in the longitudinal direction of the material web 102. In a further embodiment, it is also
 15 possible for the collecting device 16 and the discharge device 17 to be formed in one piece. The Collecting device 16 and the discharge device 17 can then be moved together. In another embodiment, the curtain applicator 13 can be moved along the material web 102,
 20 so that the collecting device 16 and the discharge device 17 do not have to be moved at the start or at the end of the coating operation.

of the present invention

Under the material web 102 there is arranged a lower
 25 collecting device 101. The lower collecting device 101 collects the application media following a break in the material web 102. Using the lower collecting device 101, a plurality of application media can preferably likewise be collected separately. For this purpose,
 30 the lower collecting device 101 can be equipped with a separate channel for each application medium.

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the present invention including
 Fig. 2 shows ~~on~~ a specific embodiment of a collecting device 20 and a discharge device 21. An application
 35 medium 22, illustrated ~~as a solid line~~ ^{as a dotted line}, and an application medium 23, illustrated ~~as a dashed line~~ ^{as a solid line}, fall from a curtain applicator 204 into the collecting device 20 having two sections 24 and 25 arranged one after the other in the

running direction of the material web. ~~The~~ Sections 24 and 25 have a separating element 28 in order to prevent mixing of ~~the~~ application media 22 and 23. In addition, ~~the~~ sections 24 and 25 are provided with discharge openings 26. By ~~means~~^{way} of ~~the~~ discharge openings 26, ~~the~~ application media 22 and 23 can be passed on to ~~the~~ discharge device 21. ~~The~~ Sections 24 and 25 are equipped with inclines 27. ~~The~~ Inclines 27 pass on ~~the~~ application media 22 and 23 to ~~the~~ discharge openings 26. In addition, ~~the~~ application medium 22, which falls into ~~the~~ section 24, can flow through to ~~the~~ discharge device 21 ~~under~~^{due to} ~~the~~ inclines 27 of ~~the~~ adjacent section 25. ~~The~~ Inclines 27 thus fulfill a further function, in that they permit ~~the~~ application media 22 and 23 to cross without the crossing ~~of~~ application media 22 and 23 mixing with each other. Instead of the inclines, there can of course also be a curved shape.

20 ~~The~~ Discharge device 21 has a discharge plate 201. ~~The~~ Discharge plate 201 is provided with channels 29, in which ~~the~~ application medium 22 runs away, and with channels 200, in which ~~the~~ application medium 23 runs away. Thus, each of ~~the~~ application media 22 and 23 can be carried away separately. At the end of ~~the~~ discharge plate 201 there ~~are~~^{is} provided drainage channels 202 and 203, in which ~~the~~ application media 22 and 23 are carried away separately.

30 ~~The~~ Channels 200, which run in ~~the~~^a running direction L of ~~the~~ material web 102, bridge ~~the~~ drainage channel 202 extending in ~~the~~^a transverse direction Q. Thus, ~~the~~ application medium 23 crosses ~~the~~ application medium 22 at the transition from ~~the~~ discharge plate 201 to ~~the~~ drainage channel 203. As a result of this crossing, mixing of the two application media is reliably ruled out.

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Drawing:

The drainage channels 202 and 203 carry the application media 22 and 23 away transversely with respect to the longitudinal direction L of the material web 102. Discharge hoses 205 (here only indicated in figure 3), through which the application media 22 and 23 are supplied to a storage container, can be connected to the drainage channels 202 and 203.

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Moreover, figure 3, shows a device 10 in which the drainage channels 19, 100, 202, and 203, seen in the transverse direction Q of the device 10, are arranged beside one another. Each of these drainage channels 19, 100, 202, and 203, separately from one another, picks up the application medium 22 and 23 collected by the respective section 14, 15, 24, or 25 of the collecting device 16 and 20 and passed on to the discharge plates 18 and 201, respectively, from where it is discharged to the outside of the device 10.

List of designations

10	Device
11, 12	Curtain
13, 204	Curtain applicator
102	Material web
14, 15, 24, 25	Section
16, 20	Collecting device
17, 21	Discharge device
18, 201	Discharge plate
19, 100, 202, 203	Drainage channel
101	Lower collecting device
22, 23	Application medium
26	Discharge opening
27	Incline
29, 200	Channel
L	Longitudinal direction
Q	Transverse direction

Patent claims

Claims & Abst
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1. A device (10) for the application of at least two liquid to pasty application media (22, 23) to one
5 or both sides of a moving surface, having a curtain applicator (13, 204) for applying the application media (22, 23), the curtain applicator (13, 204) discharging the application media (22, 23) onto the moving surface as curtains (11, 12)
10 moving substantially under the force of gravity, and the surface in the case of direct application being the surface of a material web (102), in particular of paper or board, and in the case of indirect application being the surface of a
15 transfer element, for example an applicator roll, which transfers the application media to the surface of the material web (102), **characterized in that** a collecting device (16, 20) for the separate collection of each application medium
20 (22, 23) is provided between the curtain applicator (13, 204) and the material web (102), it being possible for the curtain applicator (13, 204) and the collecting device (16, 20) to be moved relative to each other.
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2. The device (10) as claimed in claim 1, **characterized in that** the collecting device (16, 20) is assigned a discharge device (17, 21).
- 30 3. The device (10) as claimed in claim 2, **characterized in that** the collecting device (16, 20) has discharge openings (26) to pass on the application media (22, 23) to the discharge device (17, 21).
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4. The device (10) as claimed in one of claims 1 to 3, **characterized in that** the collecting device (16, 20) is provided with inclines (27) arranged

- 12 -

above the discharge openings (26), in order to lead the application media (22, 23) to the discharge openings (26).

- 5 5. The device (10) as claimed in one of claims 1 to 4, **characterized in that** the collecting device (16, 20) is subdivided into a plurality of mutually adjacent sections (14, 15, 24, 25), each of the sections (14, 15, 24, 25) holding only one
10 application medium (22, 23).
6. The device (10) as claimed in claim 5, **characterized in that** the mutually adjacent sections (14, 15, 24, 25) are separated from one
15 another by a separating element (28).
7. The device (10) as claimed in claim 5, **characterized in that** the mutually adjacent sections (14, 15, 24, 25) are constructed in the
20 manner of channels with curved longitudinal wall surfaces, which meet one another in the transverse machine direction and thus form the separating element (28).
- 25 8. The device (10) as claimed in claim 5 or 6, **characterized in that** the discharge openings (26) of the one section (14, 15, 24, 25) are offset in relation to discharge openings (26) of the adjacent section (14, 15, 24, 25).
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9. The device (10) as claimed in one of claims 2 to 8, **characterized in that** the discharge device (17, 21) has a discharge plate (18, 201), at the end of which there is arranged a separate drainage
35 channel (19, 100, 202, 203) for each application medium (22, 23).

10. The device (10) as claimed in claim 8,
characterized in that the discharge plate (18,
201) has at least one separate channel (29, 200)
for each application medium (22, 23).
- 5 11. The device (10) as claimed in claim 10,
characterized in that at least one channel (200)
of the discharge plate (201) bridges at least one
of the drainage channels (19, 202).
- 10 12. The device (16) as claimed in claim 10,
characterized in that the drainage channels (19,
100, 202, 203), seen in the transverse direction
of the device (10), are arranged beside one
15 another and each of these drainage channels (19,
100, 202, 203), separately from one another, picks
up the application medium (22, 23) resulting from
the respective section (14, 15, 24, 25) of the
collecting device (16, 20) and discharges it to
20 the outside of the device (10).
- 13, 14 13. The device (10) as claimed in claim 10 or 11,
characterized in that the channels (29, 200) are
fabricated separately from one another or comprise
25 any desired channel cross-sectional shapes lined
up in a row.
- 15 14. The device (10) as claimed in one of claims 9 to
13, **characterized in that** the discharge plate (18,
30 201) or the channel (29, 200) and at least the
drainage channel (100) has a gradient.
- 16 15. The device (10) as claimed in one of claims 2 to
14, **characterized in that** the application media
35 (22, 23) can be carried away to the side on which
the drives (drive side) are placed.

17 16. The device (10) as claimed in one of claims 2 to 15, **characterized in that** the collecting device (16, 20) and the discharge device (17, 21) are formed in one piece.

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18 17. The device (10) as claimed in one of claims 2 to 16, **characterized in that** the collecting device (16, 20) and the discharge device (17, 21) are separate components.

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19 18. The device (10) as claimed in one of claims 5 to 17, **characterized in that** the collecting device (16, 20) has two sections (14, 15, 24, 25) which can be moved in opposite directions in the longitudinal direction of the material web (102).

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20 19. The device (10) as claimed in one of claims 1 to 17, **characterized in that** a lower collecting device (101) is arranged under the material web (102).

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21 20. The device (10) as claimed in claim 19, **characterized in that** the application media (22, 23) can be collected separately by the lower collecting device (101).

25

22 21. The device (10) as claimed in claim 20, **characterized in that** the lower collecting device (101) has a separate channel for each application medium (22, 23).

30